

June 30, 2010

Vader Water System Action Plan

Prepared by Lewis County

For Washington State Department of Health

EXECUTIVE SUMMARY

The Vader Water System Action Plan was developed to implement a change in the Vader Water System's management, operations, and ownership through a court appointed receivership.

The City of Vader is located in South Lewis County, Washington in the Lower Cowlitz River basin. The City has a water allocation from the Cowlitz River and it provides water to area residents including a community outside its city limits named Enchanted Valley.

According to the most recent Water Facilities Inventory Forms (WFI), the Vader Water System has 248 residential connections and 12 non-residential connections for a total of 260 connections within City limits. Additionally, there are 93 residential and 14-non residential connections in Enchanted Valley bringing a known total number of connections to 367.

For the past several years, the system has struggled with water outages, boil water advisories, and treatment violations. Since 2006, the system has had 16 reported water main breaks and has been issued nine boil water advisories from the Washington State Department of Health (WSDOH).

The City recognizes the gravity of the current condition of its water system and the associated impacts to the water supply and is willing and committed to address them. Even so, the City does not have the capacity to do so because of current debt, a poor credit rating, and the inability to manage the system at this time.

Over the past several months, the City of Vader, Lewis County, and WSDOH have explored remedial options. From this, it appears that the most viable solution under the circumstances is for WSDOH to file a court petition to appoint Lewis County receiver of this water system.

This action sets in motion a potential change in the water system ownership from the City of Vader to Lewis County. Because this solution constitutes a major structural change, WSDOH has requested that Lewis County develop this Action Plan to demonstrate its capacity to manage and operate the system if named receiver. A \$15,000 grant from the Drinking Water State Revolving Fund (DWSRF) set-aside was awarded to the County to develop an approved action plan by June 30, 2010.

The Plan describes organizational and fiscal steps, budget, and timelines for the System to transition from the City of Vader to Lewis County as appointed receiver and eventual owner should WSDOH initiate the receivership process.

Key activities include establishing an organization and structure to operate, manage, and own the utility, increasing capacity so the currently over-connected system can safely and reliably serve its existing customers and meet future growth projections, increasing the integrity of infrastructure, including necessary repairs, replacement and improvements to water distribution system, and gaining an understanding of the system through comprehensive and physical and fiscal assessments to achieve and maintain safety, reliability, and sustainability.

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1. INTRODUCTION

1.1 PURPOSE

This Plan was developed to demonstrate Lewis County’s managerial, financial, and technical capacity and commitment to ensure consistent compliance with drinking water regulations and to provide a safe, reliable, sustainable source of drinking water for the Vader Water System customers.

1.2 MISSION

Protect public health by ensuring consistent compliance with drinking water standards and to enhance performance beyond compliance to bring about efficiency, effectiveness, and service excellence promoting continuous improvement through monitoring, assessment, and strategic planning.

1.3 APPROACH

This Action Plan is the result of a collaborative effort primarily between Lewis County, the City of Vader, and the Washington State Department of Health (WSDOH). After months of discussion, stakeholders involved in the process reached a mutual consensus that appointing Lewis County receiver of the system would be the most appropriate course to take to stabilize and improve the future of the system. Parts of this process are described below.

Vader Water System Action Planning

- Working committee
- Public participation
- Action plan

Working Committee

The Working Committee includes citizen stakeholders, Department of Commerce, Public Works Trust Fund Board, WSDOH, Vader City Counsel, and Lewis County staff and Commissioners. Committee members participate in regular monthly meetings. These working sessions explored available options and charted this course of action to resolve the Vader Water System issues. These meetings are open to the public and meeting notes are available.

Public Participation

Keeping residents and water system customers informed of pending changes is achieved through a mix of ongoing activities at different levels.

- The City of Vader includes updated information in the City’s monthly newsletter and customer utility bills.
- WSDOH, Lewis County, and Vader will hold a joint public meeting prior to filing court petition.
- WSDOH, Lewis County, and Vader will produce and distribute Frequently Asked Questions flyers.
- Lewis County’s adopted public participation procedures include public hearings prior to taking action on new or revised policies and plans.

Action Plan

Lewis County developed this Action Plan to demonstrate its managerial, financial, and technical capacity to consistently provide safe reliable drinking water for Vader water system customers compliant with drinking water regulations. This Plan describes specific actions, budgets and timelines for implementation if the County is named receiver of the System. The Plan will be submitted to WSDOH for approval. The final, WSDOH approved plan will be available to the public.

1.4 AUTHORITY

RCW 36.94.020 recognizes that the construction, operation, and maintenance of a system of sewerage and/or water is a county purpose. Therefore, every county has the power to adopt, provide for, accept, establish, condemn, purchase, construct, add to, operate, and maintain a system or systems of water supply within all or a portion of the county.

1.5 RELATIONSHIP TO OTHER PLANS AND REGULATIONS

The Vader Water System Action Plan should be read in conjunction with all other applicable policy and regulatory framework including the Vader Water System Plan and Lewis County Comprehensive Plan.

Water systems must comply with a number of Federal, State, and local regulatory standards pursuant to the Safe Drinking Water Act, Clean Water Act, and local Health Departments.

2. Managerial Capacity

Managerial capacity refers to institutional and administrative capabilities. It is the ability of a water system to conduct its affairs in an accountable and responsible manner that enables the system to achieve and maintain compliance and consistency with regulations and policies.

Immediately upon being named receiver, Lewis County will be prepared to manage the Vader Water System under the Lewis County Public Works Department. The County will have created a Utility Division under the Director of Public Works. The Utility Division will be staffed by a Utility Engineer and a system operator with backup and support staff.

2.1 OWNERSHIP AND ACCOUNTABILITY

- Are the system owner and manager identifiable and accountable?
- Are policies, assumptions, and rates clearly stated and visible?

Action items

- Establish Utility Division.
- Adopt Utility Division Organizational Chart.
- Adopt Chapter 13 in Lewis County Code for Vader Water Utility.
- Inform public through media.
- Distribute and publicly display customer information and notices.
- Hold public meeting and hearings.
- Develop and adopt 6-year budget.
 - Primary Budget Categories
 - Administration
 - Accounting
 - Bonding
 - Supervision
 - Engineering (in-house)
 - Maintenance/Operation
 - Capital Expenses
 - Equipment
 - Structure
- Adopt budget amendments a necessary.
- Update Water Facilities Inventory Form.

Currently, the Vader Water System (System) -identification number 90900E- is owned and operated by the City of Vader. At this time, the City does not have the capacity to install needed improvements or to operate and manage the system adequately. After much discussion, the City, DOH, and Lewis County have concluded that the County should become receiver to transition into becoming owner of the System.

As the County understands the process, DOH will file a petition to the state Attorney General (AG) recommending the County be appointed receiver of the system. The AG will schedule a receivership hearing with Lewis County Superior Court. The Court will set a hearing to consider the receivership petition. If appointed receiver, the County will be prepared to manage and

operate the system under the Utility Division of the Lewis County Department of Public Works.

To do this, the County will have adopted an ordinance to establish a Utility Division and the approved Vader Water System Plan. This ordinance will be codified and adopted into Lewis County Code Chapter 13. The draft Ordinance is attached as Appendix I and a draft Utility Division organizational chart is attached as Appendix F.

Additionally, the County intends to develop water system policies to include such things as a cross connection control plan, a hold harmless clause for damages, a termination of service for non-payment, penalties for unauthorized tampering, and procedures for selling service connections.

It is up to the Court to set a period of time for the System to remain in receivership and to set a hearing to determine final disposition and ownership. The County expects the Court to set conditions as part of the receivership process.

When the Court determines a final disposition of the System, Lewis County will be positioned to assume ownership. At this time, the County will request that ownership of all infrastructure assets including intake, pumps, pump station building, reservoir, transmission lines, water treatment facility, the distribution system, and service meters be transferred to Lewis County.

The County will have negotiated a franchise agreement with the City of Vader for use of Right of Way to construct and maintain distribution and transmission lines. The County will obtain legal access from private property owners through easements for the same and for the intake from the river. The County prefers to enter into a legal contract with the City for use of Vader's Surface Water Right Certificate #9616 rather than initiate a transfer of right with the Department of Ecology. The handling of water rights is under review with the Prosecuting Attorney's office. Lewis County will update the Water Facilities Inventory Form (WFI) with the appropriate changes as required.

A preliminary draft 6-year budget was developed from the Vader budget and incorporating Lewis County Data, including new staffing levels and assumptions. Adjustments were made to add inflation projections, and to reflect renegotiated State Revolving Fund (SRF) loan terms on existing debt and for SRF new debt service. Lewis County's 2010 budget will be amended to include \$80,000 in appropriations for start-up costs. A draft budget is attached to this Plan as Appendix A.

These budget assumptions were used to design a rate structure. Skip Rand from the Rural Community Assistance Corporation (RCAC) conducted a rate study and presented it to the Vader Working Group, Vader City Council, and Board of County Commissioners. Council members and County Commissioners received basic education on rate theory to consider how policy decisions affect customer rates. Appendices B and C illustrate the methodology used to construct a water revenue projection and proposed rate structure.

The rate study has resulted in several potential structural changes including, but not limited to, an increase in rates for all customers, and adjustments to the reserve fund for inflation to keep up with future operations and system upgrades. The County and City are considering a combination of scenarios to increase rates to support the System in a manner that is most equitable for rate payers. This will most likely include a higher fixed (base) fee for all water customers with a smaller allowance for the quantity of water included in the base fee and a new variable fee component to charge customers for water usage based on Equivalent Residential Units (ERU's).

Likewise, these discussions identified several policies that ought to remain in the new draft ordinance. These include keeping the same bi-monthly billing cycle and offering a low-income or senior subsidy.

2.2 STAFFING AND ORGANIZATION

- Is the system properly organized and staffed?
- Is there an assurance of ongoing training of managers and operators?
- Do customers know who to call with questions, concerns, or to report emergencies?

Action items

- Staff utility for operations and maintenance.
- Schedule training and certification classes for staff.
- Increase fiscal staff and budget to manage customers and billing.
- Negotiate employment contract/offer with current Vader Water System Operator and Union.
- Enter MOU with union to contract for backup services.
- Contract for services with qualified operator for backup.
- Assess staffing levels and budget assumptions for operations and maintenance.

DOH requires all Group A Community water systems to retain at least one certified Water Distribution Manager (WDM) according to WAC 246-290-050. Based upon the system size, the System is required to have a WDM Level 1 on staff.

The System relies on surface water for its water supply. Based on the complexity of the surface water treatment system, DOH requires a Water Treatment Plant Operator (WTPO) of a particular classification level. The Vader treatment plant purification rating results in a requirement for staffing of, at a minimum, a certified WTPO 2 who is available 40 hours a week and on call 24 hours a day, 7 days a week. If the WTPO 2 is unavailable due to training, other work assignments, vacation, and other reasons, a backup WTPO must be able to respond within 24 hours notification. This means that there will be a backup WTPO available and/or on call to provide necessary service and fulfill operation and maintenance functions. A backup WTPO 1 can only perform routine monitoring. A backup WTPO 2 is needed to make any chemical treatment decisions. The System must implement a Cross-Connection Control Program. Lewis County will ensure that a Cross-Connection Specialist is on staff to follow the CCC program to

protect the potable water supply.

The Utility will retain staff with WDM 1, WTPO 2, and CCS certifications. The water system will be staffed by personnel from the Utility Division and Facilities Department qualified to manage and operate a water system and at levels required by WSDOH. Most of the staffing will utilize current County employees with the exception of a Water System Operator. (Draft Public Works organization chart attached as Appendix G).

The Water System Operator position will be offered to the current WTPO 2 and WDM 1 certified Vader Water System operator. A labor contract must be negotiated with union representation.

A staff member from the County Facilities Division who currently operates the County's public water systems will become certified to serve as backup operator. This person will also be the meter reader. Facilities will charge the Utility Division for labor. The draft budget includes an estimate of 8-10 hours per month of work to perform these services.

Since all staffing levels are assumed, the County will do an analysis of the actual number of hours spent managing and operating the system. Adjustments will be made as necessary. At this time, the County has assumed and budgeted for 1.6 FTE's to operate the system. This includes a 1.15 FTE WTPO 2. The Human Resource Department has checked for internal equity compliance with respect to job classifications and pay grades for newly assigned duties and the new operator position.

The County is checking with private contractors who may be needed for additional backup and has identified a qualified water system operator working for another municipality. If necessary –there may be a time gap in certifying the facilities backup operator or in the event the Vader System operator does not accept the County's offer- the County is prepared to offer a contract for services with a qualified private operator as a stop gap measure. The County will enter into an MOU with the labor union prior to signing a contract for services.

Administrative support for the water system includes a .15 FTE Administrative Assistant from Public Works and a 1.0 FTE from Fiscal to manage customers, billings, and the utility module.

2.3 PLANNING

-Are there strategies to cover improvements?

-Is the system plan consistent with other plans, rules, and regulations?

Action items

- Set up Review Committee pursuant to RCW 36.94.
- Update Water System Plan including revised Capital Improvement Plan and submit to WSDOH for approval.
- Draft rate ordinance.

- Review Committee reviews WSP and makes recommendations to County Commissioners to adopt.
- County adopts water system plan by Resolution and Rate Ordinance.
- County amends and adopts revisions to Capital Facilities and Utilities element in Comprehensive Plan by Resolution.
- Safety procedures:
 - Risk Management visits the site no later than the first day receivership appointment to conduct a safety/loss control inspection for “ground safety” (defined as non-operational safety).
 - Risk Management researches issues of operations safety for water department and conduct safety/loss control inspection within the first 90-days of ownership.
 - Risk Management contacts the Washington Counties Risk Pool (WRCP) to determine liability and property coverage.
 - Risk works with WRCP and/or a broker to further analyze and determine coverage for environmental insurance coverage.
 - Risk conducts a site visit to assess the facilities and operation and to collect production data necessary to provide information for accurate insurance pricing and coverage.

There are several planning functions that the County must complete for successful transfer of the water system. Several of them are statutory requirements listed in Title 36 RCW. These include comprehensive planning under Growth Management and provisions for county sewerage, water, and drainage systems. The County is required to amend its Comprehensive Plan to adopt the Water System Plan (WSP). This will be included on the docket for this year’s amendment package. The Board of County Commissioners will adopt the approved updated Vader WSP, budget amendments for the System, and amend its Comprehensive Plan by Resolution before November 1, 2010. Comprehensive Plan amendments must include proper public notice and a hearing prior to adoption as well as an environmental determination under the State Environmental Protection Act (SEPA).

Before a WSP is adopted into the County’s Comp Plan Capital Facilities and Utilities element, it must be approved by an appointed Review Committee. The County will initiate and lead the formation of a Utility Review Committee following 36.94.050 RCW.

The WSP must also undergo revision to incorporate new information. Naturally, this includes edits to reflect the receivership status and new management, operations, and potential change in ownership. Structural changes including budget, a reprioritized capital improvement plan, and new water rates must also be included. Additionally, there already existed items identified by the City and WSDOH in the WSP to incorporate Enchanted Valley into the water service area.

A contract between the City and its engineer consultant is in place to fund the WSP update. The consultant is working on the Plan revisions and will submit to WSDOH by July 1, 2010. There is a 90-day review window for WSDOH.

The County must also draft, adopt, and implement a new water system ordinance. As discussed earlier, the rate model discussions have laid much of the foundation for this piece. The new ordinance will be adopted by the County Commissioners following Lewis County's adopted public participation process. This includes public notice and making the draft ordinance available for public review prior to a hearing. Timing is critical. Current water rates are not enough to support the system. Should the court appoint Lewis County as receiver, the County will act immediately to adopt and implement its new ordinance. This would occur approximately 30 days following the court's receivership decision.

3. Financial Capacity

Financial Capacity refers to the water system’s ability to acquire and manage sufficient financial resources to allow the system to achieve and maintain compliance with all drinking water regulations and requirements.

3.1 REVENUE SUFFICIENCY

- Do revenues cover costs?
- Do water rates and charges reflect true cost of service?
- Is there a plan for regular reviews to ensure rates are adjusted to cover costs?

Action items

- Prepare and adopt water budget.
 - Includes
 - Staffing to include anticipated FTE salary and benefits on the County scale
 - Interfund rates for cost of IT, Risk, Fiscal, Equipment Rental, and Facilities.
 - Temporary payments to the County Prosecutors Office for work in moving the system from Vader to County.
 - Inflation increased in future year projections Revenue by 4% and Expense by 3% to allow buildup of reserves for repairs, future system improvements, or unanticipated operating expenses.
 - Debt repayment for new Drinking Water State Revolving Fund Loan.
- Implement rate structure.
- Assess financial viability.
- Conduct asset valuation and implement asset management strategy.
- Obtain legal access to infrastructure.

A draft water system budget was prepared by the County’s Budget Director with the cooperation of the City of Vader. The Vader Water budget was used for baseline expense categories and assumptions. The draft budget reflects renegotiated loan repayment for capital improvement debt and new debt service of \$361,281. The budget was expanded to include County’s expense categories and rates for service. In addition, temporary payments for legal and professional services were added during the transition.

Overall, the County anticipated and estimated additional costs associated with the system transfer. To date, these include \$3,400 to train staff to operate the system, and the purchase of a utility software module estimated at \$16,700 (if the County becomes owner).

Assets of the System include both infrastructures and operating equipment. A list of these assets is provided in the following table. Detailed descriptions of the system infrastructures are provided in the 2008 WSP. Small equipment includes tools, edge trimmers, power lawn mower, air compressors, monitoring equipment, and a bench lab.

Through the receivership process, the County anticipates the Court will determine that the system’s infrastructure assets would be transferred to the County with ownership of the system. These would include intake, pumps, pump station building, reservoir, transmission

lines, water treatment facility, the distribution system, and service meters. The County Property Management Division is currently reviewing options for the transfer of easements and property.

ITEMS	QUANTITY
Raw water intake	20 lf – 8" HDPE
Raw water pumps	3 - 25 HP
Raw water pump station building	3 – 25 HP pumps piping
250,000-gallon reservoir	
Raw water transmission line	4,200 lf – 4" HDPE & AC
Water treatment plant facility	2-100 gpm capacity units
Transmission system	4,300 – 10" PVC
Distribution system	9,900 lf – 8" PVC
	11,600 lf – 6" PVC & AC
	2,200 lf – 4" PVC
	1,100 lf – 2" PVC
Service Meters	360
Truck	1
Mini Excavator	1
Property of water treatment plant facility	Parcel # 012546002000
Easement to intake site	Parcel # 012549000000

Currently, there are several “unknowns” about the system’s financial viability. It will be critical for the County to conduct assessments to understand the full life-cycle of the utility and to establish and maintain an effective balance between long-term debt, asset values, operations, and maintenance expenditures and operating revenues.

Lewis County recognizes the current inventory and asset management mechanisms are antiquated and do not allow for accurate financial forecasting. An asset valuation must be conducted to better understand the condition of and costs associated with critical infrastructure assets. Once known, the County can establish and implement an active asset management strategy utilizing the U.S. Environmental Protection Agency (USEPA) Model STEP Guide system upon receipt of the water system. It is anticipated the initial phase will be completed by 2012.

These will ensure service levels consistent with anticipated growth and system reliability goals, assure coordinated asset repair, rehabilitation, and replacement efforts, and the establishment of predictable rates consistent with community expectations and acceptability that are adequate to recover costs, provide for reserves, and plan and invest for future needs.

Property associated with the System infrastructures need to be addressed, too. The water treatment facility and tank are situated on property owned by the City of Vader; and legal access to the System intake on the Cowlitz River is by easement through private property. There is a large communication tower behind the water treatment plant which will make conveyance of the entire parcel problematic. The County has met with the Vader and the property owners associated with easements and is currently working to obtain legal access onto all properties associated with the System.

3.2 FISCAL MANAGEMENT AND CONTROLS

- Are adequate books and records maintained?
- Are appropriate budgeting, accounting, and financial planning methods used?
- Does the system manage its revenues effectively?
- Are fiscal decisions cost effective and responsive to changing circumstances?

Action items

- Set up agency fund with Auditor's office.
- Transfer Vader's ASP software, billing database, and printer to Fiscal.
- Develop County's billing software and database.
- Establish procedure between County and Vader for sewer transactions.
- Establish process with Treasurer's office to collect billing information from Fiscal and account for cash collection for bill payment.
- Establish procedure to transfer customer water usage from Public Works to Fiscal.

If the County is named receiver, the Auditor's office is prepared to set up an agency fund to immediately track transactions. If the County becomes the system owner, all transactions will transfer to the County's current water fund.

The Fiscal Department will transfer and use Vader's existing ASP software and license, billing database, and the City's printer to process billing during receivership. Since Vader's billing system includes water and sewer, the County will also bill for both. Sewer transactions will be transferred back to Vader. A procedure will be in place for Public Works to submit water meter readings and for Vader to submit sewer billing information to Fiscal.

Fiscal will process all payments, record payments into billing system, and process payroll. The County Auditor audits work from Fiscal and cuts warrants for payments to vendors and is responsible for financial statements and audits for the state. The County Treasurer is responsible for all cash collections for the County. The Treasurer will establish a process to be sure that billing information is collected from Fiscal and will account for all cash for the Auditor's reports.

4. Technical Capacity

Technical capacity refers to the physical infrastructure of the water system including the adequacy of source water, treatment, storage, and distribution of drinking water. It includes the ability of system personnel to operate and maintain the system to consistently meet and maintain safe drinking water standards.

4.1 WATER QUALITY

- Does the system produce potable water in compliance with regulatory and reliability requirements?
- Does the system provide reliable, responsive services with acceptable service levels?

Action Items

- Review Water Quality Monitoring Report and implement testing as required.
- Provide customers 2011 consumer confidence report.
- Continue the approved monitoring schedule to comply with State drinking water standards.

The System is a Group A public community water system, which must comply with the drinking water standards of the Federal Safe Drinking Water Act and its amendments. These federal standards are adopted as WAC 246-290.

One requirement of Group A community water systems is to have an approved Water System Plan (WSP). The System's WSP was approved in 2008, but is being updated to reflect the proposed receivership of the System to the County and to show the re-prioritization of capital improvement projects based on public health risks. Capacity concerns were the driving capital improvement plan (CIP) priorities in the 2008 WSP but due to recent line breaks and the commensurate public health concerns, line replacement projects are a higher priority than capacity improvements. The first draft of the WSP Update is scheduled for submittal to State DOH by July 1, 2010.

Requirements for a WSP are outlined in WAC 246-290-100. Water purveyors must "demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations" and "demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state and federal laws, including applicable land use plans". The WSP is a vital planning and engineering document for water systems. This demonstration of business responsibility and planning is approved by the State Department of Health (DOH). Detailed information about monitoring requirements, system analyses, and operations can be found in the WSP.

Reporting and monitoring are made on a regular basis to comply with federal drinking water standards in WAC 246-290. These monitoring programs will not change with the proposed receivership. To help Group A systems comply with these regulations, DOH issues each system a Water Quality Monitoring Report (WQMR) that summarizes the yearly water testing requirements. These requirements are based on potential contamination and risk evaluation.

Lewis County will review these reports upon receipt and implement testing as required.

In addition, an annual consumer confidence report is required to be sent to all customers by July 1 according to WAC 246-290-72001. The City of Vader will provide the consumer confidence report to their customers for 2010. Upon ownership of the System, the Utility will be providing this annual report.

A discussion of the System's adherence to drinking water standards along with a monitoring schedule of frequency and locations is in Chapter 3 of the 2008 WSP, and WSP Update. Lewis County will continue the approved monitoring schedule to comply with State drinking water standards.

4.2 SYSTEM ANALYSIS

-Does the system have a reliable source of drinking water?

-Is there a capital improvement and financing plan to implement system improvements?

Action Items

- Execute grant and loan package to implement system repairs.
- Continue to monitor lost and unaccounted for water.
- Continue to implement capital improvements.
- Lift moratorium when there is additional system capacity.

The source of water for the Vader system is the Cowlitz River. The City has a water right for a surface water diversion from the Cowlitz River for municipal use. The maximum instantaneous flow is 0.5 cfs or about 224 gpm. The point of withdrawal is at the intake structure, which is located at River Mile 27, approximately 9.5 miles upstream from the confluence with the Toutle River (Appendix D). The water right certificate is #9616 with a priority date of November 11, 1972.

Metered production and consumption were analyzed in the 2008 WSP for the period of 2000 through 2005. Table 1 provides a summary of that analysis. It shows the current water right is adequate for existing use and future growth. It also shows an average volume of lost and unaccounted for water of 40.83% also referred to as "Distribution System Leakage (DSL)".

YEAR	TOTAL METERED PRODUCTION (gpd)	TOTAL METERED CONSUMPTION (gpd)	DISTRIBUTION SYSTEM LEAKAGE (gpd)	PERCENT OF TOTAL PRODUCTION
2000	84,244	56,078	28,165	33.43
2001	99,584	52,111	47,473	47.67
2002	96,437	52,010	44,428	46.07
2003	103,275	55,327	47,948	46.43

2004	85,306	56,326	28,980	33.97
2005	98,350	61,571	36,779	37.40
Average	94,533	55,571	38,962	40.83

Lost and unaccounted for water is the difference between metered production and metered consumption. Unaccounted for water may be due to leaks and unauthorized uses such as illegal service connections. In the Vader System the water losses have been identified as resulting from leaks in the distribution system due to the aging infrastructure. A 40.83% water loss is high and a goal was set to reduce lost and unaccounted for water to less than 10% of total water production each year. A conservation program or “Water Use Efficiency (WUE) Program” and construction standards (Chapters 4 and 7) are in the WSP to help achieve this goal. Due to the high water loss and the potential health risk associated with line breakage the City has also imposed a hookup moratorium until the water lines can be replaced. The water distribution lines that were most at risk for breakage and leaks were identified with the help of the Vader water system operators, public works staff, and their consulting engineer. Targeted distribution lines as well as replacement costs are outlined in the attached Appendix E.

Using this information, Lewis County made successful applications in 2010 for a Community Development Block Grant (CDBG) and Drinking Water State Revolving Fund (DWSRF) to fund designing and replacing the at-risk distribution lines. Requirements of each funding program will determine the start dates to begin system improvements. The DWSRF requires the funding be awarded to the System owner; and the current WSP or draft WSP Update be submitted to the DOH by July 1, 2010. It is possible that funding and project management may begin for the CDBG project upon designation of receivership; but it is certain that funding and project management will commence once ownership of the System is completed. Lewis County Public Works will provide project management and oversight. Lewis County has a proven track record of successfully administrating and completing public works and utility construction projects.

FUNDING NAME	FUNDING AGENCY	AMOUNT
Community Development Block Grant	State Dept. of Commerce	\$613,000.00
Drinking Water State Revolving Fund	State Dept. of Health	\$514,000.00

4.3 SOURCE WATER PROTECTION

- Does the system have adequate source water protection?
- Are there conditions or activities in the system’s watershed affecting our water quality?
- Are reliability features such as alarms sufficient to ensure warning and timely response for corrective actions?

Action Items

- Evaluate City's Watershed Control Program.
- Review current system reliability and implement upgrades or changes as needed.
- Respond to current Sanitary Survey findings and Filter Plant Performance Evaluation.

The adequacy of source water protection is outlined in the following regulations:

- WAC 246-290-135(5), Source Protection
- WAC 246-290-668, Watershed Control
- WAC 246-290-678, Reliability for Filtered Systems

The 2008 WSP includes a chapter, Watershed Control Program, that addresses the above three regulations. An evaluation of the City's Watershed Control Program is required every 6 years paralleling the WSP update timeline. This review will be performed as part of the next WSP Update and will include a review of any changes in raw water quality data. That data includes the results of water quality monitoring of coliforms, turbidity, temperature, pH, and other source water testing as required. Any significant changes in raw water quality will be responded to immediately with a review of upstream watershed activities.

Reliability features need to be provided in water systems with filtration technology. Some of the reliability features are alarm devices that warn of impending treatment process failures, standby replacement equipment, and redundant filter units. More information about the reliability of the filtered system is provided in Chapter 6 of the WSP. Lewis County working in coordination with the DOH, and the treatment plant operator will be reviewing the current reliability features. Upgrades and changes will be implemented as needed including responses to both the current Sanitary Survey findings and the recent Filter Plant Performance Evaluation. The latter evaluation document, dated September 2008, was performed in response to DOH's concerns with system operations.

4.4 OPERATION AND MAINTENANCE PROGRAM

- Are there timely, cost-effective, reliable, and sustainable performance improvements in all facets of operations?
- Is there a maintained awareness of information and operational knowledge to anticipate and support improvements?
- Does the system have an effective operation and maintenance program?
- Is staff trained and aware of safety and emergency procedures?

Action Items

- Develop and maintain a detailed Operation and Maintenance Manual.
- Transcribe Standard Operating Procedures to Operations and Maintenance Manual.
- Research more efficient way to take and transcribe meter readings.
- Perform sample collections following procedures in City's approved Coliform Monitoring Plan.
- Train staff on procedures in the event of an acute and non-acute coliform

- contamination or un-confirmed positive sample result.
- Develop goals and policies to gage finished water quality, determine long term improvements, and commitment to achieve them.
- Modify Standard Operating Procedures consistent with goals and policies.
- Implement a Cross-Connection Control Program.

An evaluation of the operation and maintenance (O&M) program to assure satisfactory management of the water system according to WAC 246-290 is a required chapter of the WSP. Currently the system lacks a detailed Operation and Maintenance Manual (O&MM). It is the intent of Lewis County that an O&MM will be developed and maintained by the Utility. Because of the sensitivity and public security of this information, the O&MM is intended for use only by operations personnel.

DOH conducted a sanitary survey of the water system on November 12, 2009. Their evaluation and list of response items are summarized in their letter of January 8, 2010. Several review items indicate a need to transcribe working knowledge of Standard Operating Procedures (SOP) to the O&MM. These items will need to be addressed prior to the next Sanitary Survey in 2012. After appointment of receivership, Lewis County will attend to this issue in a timely manner and incorporate the SOPs into the O&MM.

The O&M Program includes the following elements:

- Water system Management and Personnel
- Operator Certification
- System Operation and Control
- Preventive Maintenance Plan
- Inventory of Materials
- Emergency Response Program
- Cross-Connection Control Program
- Record Keeping and Reporting
- O&M Improvements
- Coliform Monitoring Plan

Management and personnel of the water system is discussed in Chapter 2 of the Action Plan. Meters and meter reading systems are under the Preventive Maintenance Plan. Accurate and well maintained meters are an essential tool in management of a water system. An automated meter reading system will also contribute toward efficiency. The City uses manual meter readings with multiple manual transcriptions of data. The County will consider automated devices (hand held or a drive by system) that will be compatible with the county billing system

The Emergency Response Plan will be amended to be consistent with County programs and resources. . The System Emergency Call Out List is being updated with current contact information (see Appendix H).

The City currently collects one monthly coliform sample. With the proposed receivership to the

County, Lewis County will be responsible for performing the sample collection and following the procedures as outlined in the City's approved Coliform Monitoring Plan. The County will also become familiar and follow the prescribed procedures in the event of an acute and non-acute coliform contamination or un-confirmed positive sample result.

The County recognizes that the entire O&M program will most likely require adjustments to accommodate new Standard Operating Procedures (SOPs) and the new Emergency Response Plan (EMP). However, during transition of the System from the City to the County, current O&M elements will remain substantively unaffected.

Optimization goals and a policy for reaching these goals are needed. The use of objective goals when compared with measurable finished water goals gage performance, determine long term improvements, affect changes in standard operating procedures, and identify commitment of resources to achieve these goals. Standard operating procedures need to be modified to achieve these goals and must include water quality goals as well.

4.5 SYSTEM REPAIRS AND IMPROVEMENTS

- Is the infrastructure adequate to provide water that meets safe drinking water requirements?
- Are capital improvement projects prioritized?

Action Items

- Work with FEMA to determine status and eligibility of repairs for intake.
- Continue to implement remaining capital improvement projects.

This section includes several re-prioritized capital improvement projects based on public health risks, and repair projects. These re-prioritized projects will be in the WSP Update. Several repair projects were identified in the development of this Action Plan and deemed important to System operation and public health protection. The newly awarded grant and loan package discussed in Chapter 4.1 will be used to replace the Base Bid and Schedule A distribution lines.

- Base Bid - Replace old 4" and 6" AC pipe with new 8" PVC
- Schedule A – Replace old 4" and 2" with new 8" PVC
- Schedule B – Replace old 4" AC with new 8" PVC
- Schedule C – Replace old 6" AC with new 8" PVC
- Schedule D – Replace old 6", 2" and 1" with new 6" PVC
- Repair one intake 25 HP pump
- Repair road to System intake site
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One intake pump and portions of the road to the intake structure were damaged in the Cowlitz River flood of January 2009. It is our understanding that the City submitted documentation to FEMA for funding to make these repairs, but the status of these reports is unknown. Upon receivership of the System, the County will work with the City and FEMA to determine the status and eligibility of the repairs.